Claims:

The claims as they currently stand are as follows.

1. (previously presented) A multicast communication system comprising a plurality of subscriber locations, each subscriber location having an access device through which a plurality of subscriber devices access multicast information sent by a multicast distribution device, wherein each access device acts as a sole multicast receiver for its respective subscriber location and distributes multicast information received from the multicast distribution device to the subscriber devices at its respective subscriber location, wherein each said access device operates by joining and leaving at least one multicast group as a substitute for the subscriber devices at its respective subscriber location, and wherein each said access device processes a first join request received from one of said subscriber devices by determining whether said access device is already joined to a multicast group indicated by said first join request, and, in the event that said access device is not already joined to said multicast group indicated by said first join request, sending a second join request to said multicast distribution device, wherein said second join request is a request for said access device to join said multicast group, wherein said access device does not forward said first join request to said multicast distribution service, wherein said joining said multicast group by said access device on behalf of said first subscriber device includes authenticating, in response to said second join request, said access device by said multicast distribution device, and wherein said multicast distribution device does not authenticate said one of said subscriber devices.

2. (previously presented) The multicast communication system of claim 1, wherein the multicast distribution device distributes multicast information for a number of multicast groups, and wherein each access device uses a predetermined multicast group management protocol to join the multicast groups on behalf of the subscriber devices at its respective subscriber location.

3. (original) The multicast communication system of claim 2, wherein the predetermined multicast group management protocol is an Internet Group Management Protocol (IGMP).

4. (previously presented) A multicast communication system comprising a multicast distribution device coupled to a plurality of subscriber locations, wherein each subscriber location is a separate subnetwork of the multicast distribution device, wherein each subscriber location comprises one and only one access device through which a plurality of subscriber devices at the subscriber location access multicast information distributed by the multicast distribution device, wherein each access device acts as a sole multicast receiver for its respective subscriber location and distributes multicast information received from the multicast distribution device to the subscriber devices at its respective subscriber location, and wherein each said access device operates by joining and leaving at least one multicast group as a substitute for the subscriber devices at its respective subscriber location, and wherein said access device processes a first join request received from one of said subscriber devices by determining whether said access device is already joined to a multicast group indicated by said join request, and, in the event that said access device is not already joined to said multicast group indicated by said join request, sending a second join request to said multicast distribution device, wherein said second join request is a request for said access device to join said multicast group, wherein said access device does not forward said first join request to said multicast distribution service, wherein said joining said multicast group by said access device as a substitute for the subscriber devices includes authenticating, in response to said second join request, said access device by said multicast distribution device, and wherein said multicast distribution device does not authenticate said subscriber devices.

5. (cancelled)

6. (previously presented) The multicast communication system of claim 1, wherein each access device is coupled to a separate interface of the multicast distribution device.

7. (original) The multicast communication system of claim 6, wherein the multicast distribution device identifies each access device based upon the interface to which the access device is coupled.

8. (original) The multicast communication system of claim 6, wherein each access device joins multicast groups maintained by the multicast distribution device on behalf of its respective subscriber devices using a multicast group management protocol.

9. (original) The multicast communication system of claim 8, wherein the multicast distribution device sends multicast information to the access devices based upon multicast group memberships of the access devices.

10. (original) The multicast communication system of claim 8, wherein each access device distributes multicast information received from the multicast distribution device to its respective subscriber devices.

11. (original) The multicast communication system of claim 4, wherein the multicast distribution device maintains accounting information for each subnetwork.

12. (original) The multicast communication system of claim 11, wherein the accounting information comprises multicast group memberships for each subnetwork.

13. (original) The multicast communication system of claim 12, wherein the accounting information comprises a duration for each multicast group membership for each subnetwork.

14. (original) The multicast communication system of claim 12, wherein the accounting information comprises a volume of multicast information for each multicast group membership for each subnetwork.

15. (previously presented) In a communication system having a multicast distribution device coupled to a plurality of subscriber locations, each subscriber location having an access device and a plurality of subscriber devices, wherein each access device acts as a sole multicast receiver for its respective subscriber location and distributes multicast information received from the multicast distribution device to the subscriber devices at its respective subscriber location, and wherein each said access device acts to join and leave at least one multicast group on behalf of the subscriber devices at its respective subscriber location, an access control method comprising:

maintaining a number of multicast groups by the multicast distribution device; and

joining one of said number of multicast groups by a first subscriber device, wherein joining one of said number of multicast groups by the first subscriber device comprises:

sending a first join request by the first subscriber device to an access device using a first multicast group management protocol;

determining, by said access device, whether said access device is already joined to a multicast group indicated by said join request; in the event that said access device is not already joined to said multicast group indicated by said join request, joining the multicast group by the access device as a substitute for the first subscriber device by sending a second join request to said multicast distribution device, wherein said second join request is a request for said access device to join said multicast group, wherein said access device does not forward said first join request to said multicast distribution service, and authenticating, in response to said second join request, said access device by said multicast distribution device, and wherein said multicast distribution device does not authenticate said one of said subscriber devices; and

associating, in response to said first join request, the first subscriber device with the multicast group by the access device.

16. (canceled)

17. (previously presented) The access control method of claim 15 , wherein authenticating the access device by the multicast distribution device comprises:

identifying the access device by the multicast distribution device.

18. (original) The access control method of claim 17, wherein the access device is coupled to an interface of the multicast distribution device, and wherein identifying the access device by the multicast distribution device comprises:

identifying the access device based upon the interface over which the second join request is received by the multicast distribution device.

19. (previously presented) The access control method of claim 15 , wherein authenticating the access device by the multicast distribution device comprises:

authenticating the access device using a predetermined authentication scheme.

20. (original) The access control method of claim 19, wherein the predetermined authentication scheme comprises IPsec AH.

21. (previously presented) The access control method of claim 15 , further comprising:

determining by the multicast distribution device that the access device is authentic; and

establishing a multicast group membership for the access device by the multicast distribution device.

22. (previously presented) The access control method of claim 15 , further comprising:

determining by the multicast distribution device that the access device is not authentic; and

denying a multicast group membership for the access device by the multicast distribution device.

23. (original) The access control method of claim 15, wherein associating the first subscriber device with the multicast group by the access device comprises:

maintaining by the access device a list of subscriber devices associated with the multicast group; and

adding the first subscriber device to the list of subscriber devices associated with the multicast group.

24. (original) The access control method of claim 15, further comprising:

leaving the multicast group by the first subscriber device;

leaving the multicast group by the access device on behalf of the first subscriber device; and

disassociating the first subscriber device from the multicast group by the access device.

25. (previously presented) The access control method of claim 15, further comprising:

joining the multicast group by a second subscriber device, wherein joining the multicast group by the second subscriber device comprises:

sending a third join request by the second subscriber device to the access device using a third multicast group management protocol; and

associating, in response to the third join request, the second subscriber device with the multicast group by the access device.

26. (original) The access control method of claim 25, further comprising:

leaving the multicast group by one of the first subscriber device and the second subscriber device;

remaining joined to the multicast group by the access device on behalf of the remaining subscriber device; and

disassociating said one of the first subscriber device and the second subscriber device from the multicast group by the access device.

27. (original) The access control method of claim 15, further comprising:

maintaining accounting information by the multicast distribution device for each multicast group for each subscriber location.

28. (previously presented) An apparatus for operating as a sole multicast receiver on behalf of a plurality of subscriber devices at a subscriber location in a multicast communication network, the apparatus comprising:

     a network interface couplable to a multicast distribution device;

     a subscriber interface couplable to the number of subscriber devices at the subscriber location; and

     switching logic interposed between the network interface and the subscriber interface, wherein the switching logic is operably coupled to join and leave multicast groups maintained by the multicast distribution device as a substitute for the plurality of subscriber devices at the subscriber location and forward multicast information to the subscriber devices at the subscriber location, and wherein said switching logic processes a first join request received from a first one of said subscriber devices by determining whether said apparatus is already joined to a multicast group indicated by said join request, and, in the event that said apparatus is not already joined to said multicast group indicated by said join request, sending a second join request to said multicast distribution device, wherein said second join request is a request for said apparatus to join said multicast group, wherein said switching logic does not forward said first join request to said multicast distribution device, and wherein said joining said multicast group by said access device as a substitute for the subscriber devices includes authenticating, in response to said second join request, said access device by said multicast distribution device, and wherein said multicast distribution device does not authenticate said subscriber devices.

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29. (original) The apparatus of claim 28, wherein the switching logic comprises:

     first multicast group management logic operably coupled to control first multicast group memberships between the apparatus and the subscriber devices;

     second multicast group management logic operably coupled to control second multicast group memberships between the apparatus and the multicast distribution device; and

     membership logic operably coupled to maintain said first and second multicast group memberships.

30. (original) The apparatus of claim 29, wherein the first multicast group management logic comprises Internet Group Management Protocol (IGMP) logic for exchanging multicast group membership information with the subscriber devices.

31. (original) The apparatus of claim 29, wherein the second multicast group management logic comprises Internet Group Management Protocol (IGMP) logic for exchanging multicast group membership information with the multicast distribution device.

32. (original) The apparatus of claim 29, wherein the membership logic is operably coupled to associate the first multicast group memberships with the second multicast group memberships.

33. (original) The apparatus of claim 29, wherein the membership logic is operably coupled to maintain a list of subscriber devices for each of said second multicast group memberships.

34. (previously presented) The apparatus of claim 29, wherein the first multicast group management logic is operably coupled to receive the first join request .

35. (previously presented) The apparatus of claim 34, wherein the second multicast group management logic is operably coupled to join the multicast group instead of the first one of said subscriber devices .

36. (previously presented) The apparatus of claim 34, wherein the membership logic is operably coupled to associate the first one of the subscriber devices with the multicast group in response to the first join request.

37. (original) The apparatus of claim 29, wherein the first multicast group management logic is operably coupled to determine that a subscriber device has left a multicast group.

38. (original) The apparatus of claim 37, wherein the membership logic is operably coupled to disassociate the subscriber device from the multicast group.

39. (original) The apparatus of claim 38, wherein the second multicast group management logic is operably coupled to determine whether there are any remaining subscriber devices associated with the multicast group based upon the membership information maintained by the membership logic.

40. (original) The apparatus of claim 39, wherein the second multicast group management logic is operably coupled to remain a member of the multicast group upon determining that there is at least one remaining subscriber device associated with the multicast group.

41. (original) The apparatus of claim 39, wherein the second multicast group management logic is operably coupled to leave the multicast group upon determining that there are no remaining subscriber devices associated with the multicast group.

42. (previously presented) A computer program for controlling a computer system, the computer program comprising:

    network interface logic for communicating with a multicast distribution device;

    subscriber interface logic for communicating with a plurality of subscriber devices at a subscriber location; and

    switching logic logically interposed between the network interface logic and the subscriber interface logic, wherein the switching logic is programmed to join and leave multicast groups maintained by the multicast distribution device as a substitute for the plurality of subscriber devices and forward multicast information to the plurality of subscriber devices, and wherein said switching logic processes a first join request received from one of said subscriber devices by determining whether said switching logic is already joined to a multicast group indicated by said first join request, and, in the event that said switching logic is not already joined to said multicast group indicated by said first join request, sending a second join request to said multicast distribution device, wherein said second join request is a request for an access device including said switching logic to join said multicast group, wherein said switching logic does not forward said first join request to said multicast distribution device, and wherein said joining said

multicast group as a substitute for the subscriber devices includes authenticating, in response to said second join request, an access device including said switching logic, said network interface logic, and said subscriber interface logic, by said multicast distribution device, and wherein said multicast distribution device does not authenticate said subscriber devices.

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43. (original) The computer program of claim 42, wherein the switching logic comprises:

first multicast group management logic programmed to control first multicast group memberships between the computer system and the subscriber devices;

second multicast group management logic programmed to control second multicast group memberships between the computer system and the multicast distribution device; and

membership logic programmed to maintain said first and second multicast group memberships.

44. (original) The computer program of claim 43, wherein the first multicast group management logic comprises Internet Group Management Protocol (IGMP) logic for exchanging multicast group membership information with the subscriber devices.

45. (original) The computer program of claim 43, wherein the second multicast group management logic comprises Internet Group Management Protocol (IGMP) logic for exchanging multicast group membership information with the multicast distribution device.

46. (original) The computer program of claim 43, wherein the membership logic is programmed to associate the first multicast group memberships with the second multicast group memberships.

47. (original) The computer program of claim 43, wherein the membership logic is programmed to maintain a list of subscriber devices for each of said second multicast group memberships.

48. (previously presented) The computer program of claim 43, wherein the first multicast group management logic is programmed to receive the first join request .

49. (previously presented) The computer program of claim 48, wherein the second multicast group management logic is programmed to join the multicast group instead of said one of said subscriber devices.

50. (previously presented) The computer program of claim 48, wherein the membership logic is programmed to associate said one of said subscriber devices with the multicast group in response to said first join request.

51. (original) The computer program of claim 43, wherein the first multicast group management logic is programmed to determine that a subscriber device has left a multicast group.

52. (original) The computer program of claim 51, wherein the membership logic is programmed to disassociate the subscriber device from the multicast group.

53. (original) The computer program of claim 52, wherein the second multicast group management logic is programmed to determine whether there are any remaining subscriber devices associated with the multicast group based upon the membership information maintained by the membership logic.

54. (original) The computer program of claim 53, wherein the second multicast group management logic is programmed to remain a member of the multicast group upon determining that there is at least one remaining subscriber device associated with the multicast group.

55. (original) The computer program of claim 53, wherein the second multicast group management logic is programmed to leave the multicast group upon determining that there are no remaining subscriber devices associated with the multicast group.

56. (original) The computer program of claim 42 embodied in a computer readable medium.

57. (original) The computer program of claim 42 embodied in a data signal.